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EFFECTS OF ELECTROCONVULSIVE SHOCK ON CEREBRAL PROTEIN SYNTHESIS[1]

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In previous studies I have examined the relationship between electroconvulsive shock as a vehicle through which retrograde amnesia may be provided in experimental animals and several biochemical alterations that have been observed as a consequence of such treatment. Utilizing a single transcorneal ECS, rather consistent biochemical changes in mouse forebrain have been observed; these included: (*a*), a decrease in the regional concentration of ribonucleic acid (RNA), with such a reduction dependent upon the age at which ECS treatment has been given (Essman, 1966, 1972); (*b*), a reduction in the incorporation of precursors into brain RNA, which has also been shown to be age-dependent (Essman, 1971); (*c*), an increase in forebrain and regional levels of 5-hydroxytryptamine (5-HT) observed shortly following a single ECS (Essman, 1967, 1968, 1970b); (*d*), an increase in ECS-induced brain 5-HT turnover time (Essman, 1968, 1970a); and (*e*), a relationship between RNA, free nucleotides, and 5-HT in brain that is altered as a consequence of cerebral electroshock (Essman, Bittman, & Heldman, 1971; Essman, 1971); e.g., electroshock has also been shown to produce changes in those cerebral nucleotides which are related to excitability functions (Bonavita & Piccoli, 1971).

In view of several of the previous relationships demonstrated between ECS and several endogenous constituents in brain probably relevant to regulatory mechanisms operative during cerebral protein synthesis, it has been my purpose to consider some of those parameters by which the effects of ECS on protein

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